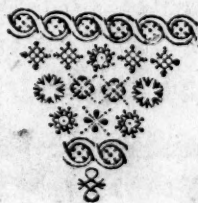


260/067 *Wm & C. Green.*
NOTES

1608/151

ON

FARMING.



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N O T E S

O N

F A R M I N G.

TH E success of Farming depends principally on the collecting manure, on a proper change of crops, and on good tillage or ploughing the ground properly, and keeping it clean; on the choice and management of flock, and on the care of the orchard and its produce. On these several articles I shall make some notes, which are chiefly collected from Mr. Young's Farmer's Tour through England; published in 1771.

1. Means for collecting Manure, and management of a Farm-Yard.

Let the farm-yard be made tolerably large, around it let there be sheds to shelter the cattle. The yard should be level, or rather hollow in the middle, that the ooze may not run off. Into this yard throw all your straw, which is not used for bedding. But as this will not be sufficient, it will be well to mow stubble, which is cut high, and cart it into the yard. All the rubbish and weeds in the lanes, &c. which should be cut while green and before they go to seed, should likewise
be

be carted in. But above all, rake together the leaves in the woods, which may be loaded into carts with large baskets, and carry them into the yard. These being spread over the yard, will, by the cattle's treading on them, and receiving their dung and urine all winter, be converted into as rich a manure as any in the world.

When cattle are housed, they should be bedded every night with straw or leaves up to their bellies. This contributes to their health, and encreases the dung. Let their stalls be cleaned out once a week. The heat of their bodies lying on the litter for that time will begin and promote a fermentation, by which it will be reduced to good manure. By this mean, for every horse or cow kept in a stable during the winter, you may make at least fifteen or sixteen large loads of dung. This dung should, in the spring, be carted out to a stercorary, which should be prepared in the following manner: First, spread a layer of earth (the cleansing of ditches or earth scraped up from the surface of the ground will answer for this) then throw on a thick layer of dung, and then a layer of earth, and so alternately a layer of dung and a layer of earth, but so that the quantity of earth shall not exceed one half the quantity of dung. By this mean you will have 23 or 24 large loads of good manure for every beast, and this laid on in the fall will be a good dressing for an acre of land.

In making the stercorary, the carts should not drive on the heap, as this would press it too much and prevent the fermentation, which is necessary to render it good compost. The loads may be shot down by the heap and thrown on with shovels, &c.

Great care should be taken to preserve the urine and

OOZE



ooze from the yard and stercoreary. For this purpose some careful farmers sink wells, the bottom and sides of which are well clayed. To these the ooze is conducted, and, when they are full, some pump it up and throw it back upon the heap, others cart it out and sprinkle it over the grass. This last is said to be an excellent practice.

There is another practice which turns to great account, as well for encreasing the quantity of manure as for feeding horses and cattle in the cheapest manner: Let a field of red clover be sowed near the farm-yard; in the second year after it is sown it will be fit for cutting by the second week in May. Let the horses and cattle be then kept in the yard, and clover cut and given to them in the stable or in racks. It has been found by experience that seven acres of clover will feed twenty horses, seven cows, five calves, and as many pigs, for seventeen weeks. Suppose the rate of keeping to be as follows:

20 horses 17 weeks at 2s. 6d. per week,	L. 42	10	0
7 cows 17 weeks at 2s. 6d. do.	14	17	6
5 calves and 5 pigs at 1s. 6d. do.	6	7	6

The amount will be - - - 63 15 0

which is *yl.* 2s. 1d. per acre. Besides this, the quantity of dung is immense where there is litter at command; and this is always the case where leaves can be gathered from the woods; for cattle fed on green food make much more urine in the summer. It has been estimated that four or five hundred loads of good dung may be made in the time mentioned from the above horses and cattle. This, mixed with earth as before directed, will produce upwards of 600 loads of manure, which would be a pretty good dressing for thirty acres of land.

It

It is to be observed, that a careful farmer suffers nothing to go to waste ; and therefore all the urine and offals from the house, and all the ordure from the necessary are carried and thrown on the stercoreary or farm-yard.

In preparing a place for the stercoreary it may not be amiss first to dig out the earth about two or three feet deep. In that case the bottom should be well rammed and clayed, to prevent the ooze from sinking into the earth. The earth that is dug out, if of a loomy quality or sandy mixed with loam, will serve to mix with the dung ; so that the labour of digging the pit will not be lost.

In order to mix the earth and dung well together, the stercoreary should be turned at least once in the summer. For this purpose a small space should be left at one end ; then, beginning at that end, throw an equal space of the compost from top to bottom into that empty space, and so proceed until the whole is well turned and mixed. The stercoreary should be kept moist, but not too wet ; for though a moderate degree of moisture promotes fermentation and putrefaction, too great a degree will prevent them. As our summer sun is very warm and exhales too much of the moisture, it will be well to cover the stercoreary with hurdles or leavy branches, or a thatched cover may be made over it.

2. *The Change and Course of Crops.*

It is a common opinion and practice of this country, that land should yield a crop only once in three years : this surely is bad farming, and what nothing but the great quantity of land could warrant. In England and throughout

throughout Europe, and indeed in all old settled countries where land is scarce and rents high, it is absolutely necessary that a crop of some sort be raised from the ground every year. And experience has evinced that land will bear this, and that the goodness of the crop depends upon culture and manure and a proper change of seeds. For though good land is of great importance, yet the skill and industry of the farmer will, in a great degree, compensate for the want of goodness in the soil in its natural state : And it is found that, by proper management, lands which are naturally poor have been brought to yield crops nearly as great as rich lands, and much greater than rich lands ill managed. The man therefore to whose lot it has fallen to possess lands naturally poor, should not be discouraged, but rather stimulated to exert his abilities and shew his skill in meliorating nature.

A succession of the same sort of crops will speedily exhaust the best land. For this reason the skilful farmer changes his crops almost every year. The succession most approved, and which is practised to great advantage in Norfolk, one of the best farming counties in England, is,

- 1 Turnips,
- 2 Barley with clover seed,
- 3 Clover,
- 4 Wheat;

Then turnips, &c. in succession again. Some have had the third and fourth year clover, and the fifth wheat.

Another course, which they find extremely beneficial, is,

- 1 Turnips,

- 1 Turnips,
- 2 Barley,
- 3 Clover two years,
- 4 Buckwheat,
- 5 Wheat ; then turnips, &c. again. .

They plough four or five time for turnips, beginning in the fall. After the second ploughing they leave the ground unharrowed to receive the benefit of the winter frosts. They plough it again in the spring, having first laid on the manure ; then they plough and harrow it again in May, and give it the last ploughing and harrowing in June, when the seed is sown.

Some put on their manure just before the last ploughing. With respect to this, experience will be the best director. The turnips should be sown in rows or the seed drilled in with a drill plough. The turnips, while growing, should be hoed twice, or ploughed between the rows, as is common for potatoes, and kept clear of weeds.

The crop is fed off with cattle and sheep. Some feed them off as they grow, confining the cattle and sheep by bundles to an acre, and when that is eaten up, removing the hurdles and taking in another acre, till the whole is fed off. Others pursue the following method : they first feed one piece, suppose an acre, by running a row of hurdles across the field ; then, before they move the hurdles, they draw another acre, and cart them for the cattle to the acre, eating off, and so on throughout the field, always carting the crop from the land where it grows to the part last cleared. If the produce is large and cattle are turned in, they spoil as much as they eat, but when turnips are laid clear above the soil, and the earth partly shaken off, they eat them up clean. *A me-*

A method practised to destroy the Turnip Fly.

Collect all sorts of weeds, mix them with straw and lay them on heaps on the windward side of the field. Then set them on fire, so that the wind may blow the smoke over the whole field. This drives away the fly at once and saves the crop. But it should be observed that the weeds must not be withered too much, as it is the smothering flame that produces the smoke, which is expected to have the desired effect.

For barley they commonly plough three times, but some four times, twice in the fall, leaving the last ploughing unharrowed to receive the benefit of the winter frosts, the other ploughing or ploughings they give in the winter or spring. With us, as our winters are generally severe, three, or even two ploughings will do; one or two in the fall and one in the spring. They sow four bushels of seed to the acre, and get from thirty-two to forty bushels in return. This seems a large quantity of seed. However, experience will shew, whether the quantity commonly sown in this country, which is usually not more than two bushels, or that sown in Norfolk is best. And, for this purpose, it will be well to try different quantities on the same field, and note the difference, and then follow that which answers best.

After the barley is sown and harrowed, they then sow the clover seed, eight or ten pounds of seed to the acre, and then roll the ground with a large wooden roller, which presses in the seed and breaks the clods. In this country some defer sowing the clover till the barley is off. The land is then ploughed and well harrowed, and sown with clover seed, eight or ten pounds to the acre and then rolled. Some recommend the sowing buck-
wheat,

wheat, before the last harrowing, and then to sow and roll in the clover seed. The buckwheat, they observe, shelters the young clover from the sun, and keeps down weeds and other grass. But in this case the buckwheat should be sown very thin. The mowing, or cutting it in the fall will not injure the clover. Both ways may be tried.

The year following they mow the first crop of clover, and feed the second. The crop of hay is generally two tons to an acre, sometimes three. I am inclined to think it will be best to mow both crops, and if feed is wanting for the cattle in the beginning of summer, it would be best to cut it and give it to them green in the farm yard, or stables, as before mentioned. If the after crop is rank, it may be fed in the fall; and if it is kept for a clover crop the next year, it should be covered in the beginning of the winter with a light coat of long dung, about ten or twelve large loads to the acre, to preserve the roots from the frost. The next year, some mow twice, some only once, and turn in the second crop as a manure for wheat.

Clover should be cut for hay before the seed is ripe, just when it seems to be in full blossom; and in making the hay great care should be taken not to expose it too much to the sun.

In curing clover, it is recommended by some as the best way to let it lie a short time in the swarth, then just turn over the swarths, and thus backwards and forwards without exposing it long at any time to the sun, and without spreading it abroad, by which means the leaves will be welted and adhere firmly to the stalks; whereas, by exposing them to the warm sun, the leaves are shrivelled and drop from the stalk, and thereby the richest part is lost.

In answer to some enquiries I made of Col. G. M. respecting his practice of making hay, I received the following letter: "I make a point of mowing only when the weather promises, with a degree of certainty, that it will be fair, afternoon gusts excepted, which, in our climate, cannot be guarded against only by my process. I then set my mowers to work as early as I can get them at it. They continue to cut until about ten o'clock. At nine o'clock I turn my horses and cattle out of my ploughs, and after the ploughmen have breakfasted I set them and the mowers to raking my grass from the swarth into winrows, beginning at the grass last cut, and proceeding on until they have gathered into winrows all the swarths which were cut the preceding part of the day. These winrows are then made into what we call grass-cocks. This being done, the mowers proceed in cutting, and the rakers follow and gather and cock after them as fast as they cut until night. When I do not chuse to take my ploughmen off, and have not other hands, my mowers cut till 11 o'clock, by which time each has cut an acre or more. The mowers then proceed to rake and cock, beginning at the grass last cut, and finishing with that first mowed in the morning. If I see the clouds arise in the afternoon, I dispatch hands sufficient to assist and get all into cock before the rain comes on. When it continues fair all day, a mower can cut about as much grass by eleven or twelve o'clock as he can conveniently rake and cock before sun-set. Thus my mowing and making of hay cost me about 5*s*. or 5*s*/6 per acre; for that is the price I give per day to a good workman, who finds himself in victuals and liquor, and who will never cut less than an acre by eleven o'clock, provided he is not to continue at it the succeeding part of the day. I say the mowing, making and cocking cost me 5*s*. or 5*s*/6 per acre, because I never open these cocks until I house

or stack my hay ; for if even repeated and continued rains should fall, while it is in cock, the water never penetrates farther than the sun and wind will immediately dry. This mode of making hay preserves it, (all except the outer side of each blade exposed to the sun) of a green colour, and prevents the evaporation of the rich juices of the grass, which are preserved in the greatest perfection. I have practised this method six successive seasons with my common meadow grass, and having fallen into the very beneficial practice of sowing twenty acres of clover every year, I have cured all my clover hay in this method; and you may depend upon it to be the best as well as the cheapest. All the caution necessary to be used in this manner of making hay is, that the grass be dry when first put into cock ; by this I mean dry from dew or rain. In the usual way of making clover into hay, the leaves become of a dark tobacco colour, and part from the stalks on the slightest touch, so that you lose very few of them. But by this method the whole are preserved of an olive green, and the stalks are soft and pliable and contain great nutriment. In regard to the time your hay must continue out in cocks before it be housed, that must depend on the weather and your judgment of its state. Having no fear of its being injured by continuing too long in the field, I leave mine out from one to three weeks, never hurrying myself from other necessary work at this busy season."

Some put up their clover when it seems to be but half cured ; but to preserve it from heating in the mow they use this precaution : They have a quantity of straw ready prepared ; they then first lay down a layer of straw and a layer of hay upon that, and so alternately. Some use a farther precaution : When they put up their hay in barracks, they leave a space at the bot-

tom

tom between the ground and the hay : they have then bags filled with hay, one or more, as they judge necessary, according to the largeness of the barrack and the state of the grafs : These bags they set up an end on the floor, and then throw in their straw and hay alternately as above, treading them down and drawing up the bags as the rick rises, and thus vent holes are made for the air to pass through the middle of the hay from bottom to top, which cools it and prevents it from heating. By these means the dry straw soaks up the superfluous moisture of the hay and becomes so impregnated with the juices of the clover that the whole is eaten up clean by both horses and cattle. This practice of intermixing straw with clover is recommended on another account : The mixture of straw prevents the bad effects of clover, which, when eaten by itself, is apt to hove cattle. And it is worthy of observation, that when cattle are fed in a yard, if there are racks of straw therein, as well as clover, the cattle will of their own accord go from the clover to the straw, and then to the clover, and so backwards and forwards alternately. And hence it appears to be proper, if straw be not mixed with clover in the rick, that a portion of it should be given to the cattle along with the clover.

If the second crop of clover is ploughed in, it will answer as a manure for wheat ; but if the second crop is cut, then it will be proper to lay on a coat of compost from the sterckory, from ten to twenty large loads to an acre, as you have it to spare. Plough it in and sow the wheat. Some harrow the ground, sow the wheat and plough it in ; others sow and harrow in the seed ; and, in harrowing, some cross harrow and divide the field into ridges by a furrow drawn with a plough ; others harrow with the furrows, which throws the
seed

seed into rows and makes the field appear as if it was sown with a drill plough; others plough and harrow the ground and then drill in the seed with what is called the drill harrow, which drops the seed, and at the same time covers it, and is made with such a number of drills that with it one man will easily sow five or six acres a day or more. This last I take to be the best method; but experience will direct in this as well as the quantity of seed to be sown; for which purpose it might be well to try different methods on the same field, and note the difference.

After the wheat is reaped, it is a common practice with the Norfolk farmers to harrow the stubble and cart it home to the yard. If the wheat be cradled there will be less stubble left on the field; but still it will be worth while to harrow and cart home what can be collected. After this they proceed in the culture of the land for turnips next year, and in the succession of crops, as before mentioned, without ever suffering the land to lie idle.

As the culture of turnips is not common, at least to such a degree in this country as in England, I am inclined to think Indian corn may be substituted to good advantage in place of turnips: and as we have not yet found marle for manuring our lands, though I have no doubt but there is plenty of it if sought for, but till it be found, lime, where it can be got conveniently, may be used instead of marle. In this culture I would recommend the ploughing up the field in the fall. Then lay on about forty bushels of unslacked lime fresh from the kiln to every acre. Various methods are used in laying on the lime: some put it in heaps, and when it is slacked they mix it with earth and cart out the mixture and

and spread it over the land. Some shoot down a load of forty bushels on each acre, there let it slack, mix it when slack with some earth, and so carry it out and spread it over the ground. Others divide the load into small heaps on the ground, and as soon as it slacks, spread it with a shovel without any mixture of earth, taking care to scrape up the ground under the heap. They then harrow the ground to mix and cover the lime: which of these methods is the best I cannot determine, not having had sufficient experience. Different experiments may be made, which is the only mode of acquiring knowledge in this business.

In the spring, plough and harrow the ground, and when it is time to plant, furrow out the ground, crossing it at right angles with deep furrows for planting: The furrows should be strait and equidistant. The breadth of the intervals between the furrows, or rows, will depend on the goodness of the soil. When the ground is furrowed out drop two or three grains at every intersection of the furrows and cover them with a hoe. If a shovel full of good dung is mixed with earth and put in each intersection where the corn is planted, the goodness of the crop would largely repay the expence. Then plough and harrow it as usual till the corn begins to tassel, always keeping the ground loose and clear from weeds and grass. But after it tassels, and the silk begins to appear, it should be left to itself. Meddling with it at that time is hurtful. And if it has had a good fall and spring ploughing, been limed and well tended till that time, the weeds afterwards will not come to any great height, or at least not to injure the crop. When the corn is ripe, plough the ground down from the rows into the furrows or middle, leaving the corn standing to dry, the blades of the stalks being

ing stripped off, and the tops cut and carried home. After the corn is pulled, the stalks may be cut down, and the ridge ploughed up. And thus the ground may be left the ensuing winter either for barley and clover seed, or for potatoes, which is a crop that deserves the attention of the farmer, either for the market or for feeding.

There is another method of preparing the ground for planting Indian-corn, which I am inclined to prefer to that just mentioned. It is to be observed that this corn does not strike a deep root, but draws its nourishment from the upper coat of earth. For this cause it is common to make hills with a hoe round the root of the stalks, but as this requires much labour, I would recommend the ploughing the land in the spring, into ridges of the width of the intended intervals between the rows, making the first furrow pretty deep; then cross the ridges with a deep furrow, and at the intersections of the ridge and cross furrows, plant the seed, and as the corn springs up, plough down the ridges into the furrows, and harrow the ground to keep it clear of weeds. By this method the corn will have plenty of rich loose mould for supplying it with nourishment without much trouble in hoeing.

If potatoes are fixed on to follow the corn, I would recommend ploughing the ground in April, pretty deep, into ridges of three and an half feet wide. Dung the furrow with about 14 or 15 loads of yard dung to an acre; then plant the potatoes on the dung, one row in a furrow, and one foot asunder. Some recommend the laying the potatoes on the earth, and the dung over them, and as the beginning of our summers are usually dry and warm, I am inclined to believe this is the best method. However, in this, as has been already observed, experience will be the best guide. Then cover them with a
plough

plough from each side. When the shoots appear a few inches above ground, plough down the land to them, and repeat the ploughing till the centre of the ridges becomes a furrow. Some, after this, give them one hand-hoeing, drawing up the earth close to the stalks; but this is condemned by others, who say that the centre of the ridge should be left low to retain the moisture and rain, and prevent its running off. If in ploughing between the rows, a plough was used with a double mould-board, to throw the earth on both sides, the furrow in the middle might be sunk deeper and the earth thrown up to the stalks without injuring the roots. In October they are to be dug up with prongs. This operation may be rendered easy by cutting down the ridges on both sides into the furrows with a plough.

When the potatoes are gathered they should be spread to dry, and, when dry, then stored away till they be carried to market or used at home. They are found to be an excellent food for cattle and hogs; cows will eat them raw greedily; hogs will fatten well on them boiled and mashed with a little barley meal or Indian corn meal mixed. In England they are estimated to be worth 2s. 6d. a bushel for feeding cattle; and, by the culture above mentioned, an acre of land will produce upwards of one hundred bushels, and of some sorts two hundred bushels. The time for planting is about the end of April, but they will do in May, or even the first week in June. Next spring sow barley and clover seed, as before mentioned, first giving the ground one good ploughing, then sowing and harrowing in the barley, and rolling in the clover seed as before directed. As your ground will now be in good heart, you may get a tolerable crop of clover that season after the barley; but then in December, when the ground is frozen, and before

fore the snow falls, you should lay on about ten loads an acre of yard dung. The clover may remain two years; then follow it with wheat on one ploughing.

After this some let the land lie fallow one year; but, if this be adopted, it will be best to plough in the stubble and sow early in the spring about one half the usual quantity of rye. This will afford fine pasture in the spring and summer. Some sow clover seed with the wheat, and this has been found to answer well, as it furnishes good fall pasture after the wheat is reaped, as well as rich pasture the summer following. This is a mode practised by the German farmers in Pennsylvania, and is found very advantageous.

If the trouble and labour required for raising two spring crops the same season, which must be the case provided potatoes be adopted as one of the routine or course crops, be thought too much, in this case corn and potatoes together, I mean a certain number of acres, for each may be made one course.

I have not mentioned oats, because in this country it is a contemptible crop and scarce worth raising; barley being far better even for the feed of horses.

A farm with one hundred acres clear land, besides what is necessary for the kitchen garden and barn-yard, if disposed agreeably to the above directions, will every year afford the following crops:

- 16 2-3 acres Indian corn,
- 16 2-3 acres potatoes,
- 16 2-3 barley,
- 33 1-3 clover : if the clover is continued two years
- 16 2-3 wheat.

Or

Or if potatoes are excluded from being one of the courses, then there may be

- 20 acres Indian corn and potatoes,
- 20 acres barley,
- 40 acres clover, if continued two years,
- 20 acres wheat.

Or if the clover is continued but one year, and the land suffered to lie fallow every fifth year, then there will be

- 20 acres Indian corn and potatoes,
- 20 acres barley,
- 20 acres clover,
- 20 acres wheat,
- 20 acres wheat stubble fallow.

Any of these modes will enable a farmer to keep a large stock in proportion to his farm, and to provide a sufficient quantity of manure to keep it always in heart.

In case of leaving a field every year fallow, it might be well to sow clover seed with the wheat, which will afford most excellent pasture after the wheat harvest, and in the spring following the field may be ploughed, and about the first of June sowed with buckwheat, which will destroy the weeds which grow up after the wheat and prepare the ground for Indian corn and potatoes the year following. Buckwheat is a meliorating crop, and, if it succeeds, is, in my opinion, equal, if not superior, to oats. In this mode then there will be

- 20 acres Indian corn and potatoes,
- 20 acres barley,
- 20 acres clover,
- 20 acres wheat,
- 20 acres buckwheat;

The quantity of one hundred acres is fixed on as a certain given quantity : if the cleared land be more or less the divisions above mentioned will of course be proportionably greater or less.

If at all adventures oats must be raised, I would recommend a practice which, I am told, has been followed by some farmers to advantage : They chuse out a piece of ground, no matter tho' of indifferent quality so it be convenient to the house ; they first plough it up in the fall and lime it with about forty bushels of unslacked lime to an acre ; in the spring they plough it again and sow it with oats : as soon as the oats are cut and gathered in, they plough in the stubble, harrow the ground and shut up the field. The oats scattered in reaping or cradling spring up and yield a good fall pasture for milch cows. Next spring it is again sown with oats and treated in the same manner, and so from year to year. I was told by a farmer that he had sixteen crops of oats successively year after year from the same field treated in this way, and that the land, from being very poor, became so rich that he was obliged to change the crop and sow barley. I will not vouch for the truth of this, but it may be worth trying.

Though crops of corn and potatoes, barley, clover and wheat, may be considered as the staple articles in farming, yet there are other articles of produce which deserve the attention of a farmer.

Pumpkins is one of these : For raising a crop of pumpkins, chuse a piece of ground near the farm-yard ; a light loomy soil answers best ; plough it up in the fall, then cross plough and harrow it in the spring ; furrow it out into squares of ten feet each, and provide a quantity of well rotten dung, and particularly hogs dung in preference to any other.

In

In the last week of May dig holes at the interfections of the furrows, and throw into each two or three shovels full of dung, mixing it well with a parcel of the mould dug out of the holes. About the 10th of June mix again the dung and mould in the holes and plant the seed. The yellow fleshed round pumpkins or the flat ribbed sort are reckoned the best. After the seed is planted, plough up the ground between and harrow it; and while the plants are growing, plough and harrow the ground as oft as is necessary to keep it loose and clear of weeds, always hand hoeing round the plants. It is the practice of some to make up hills and plant the seed in the hills: This may be proper in England, from whence I presume the practice has been brought, where the summer sun is weak and faint; but it is certainly improper in this country under our scorching sun, and where the summers are commonly dry; and therefore the holes, when the dung and mould are mixed in them for planting, should be somewhat lower than the surface of the adjoining ground. About six or seven seeds should be planted in each hole; but when the plants are up and out of danger from flies or insects, then the weakest should be plucked up, and only three of the most vigorous plants left in each hole. When the pumpkins are ripe, gather them into heaps, laying them on a thick bed of straw and cover the heaps well with straw to guard them from frost. They are an excellent food for both cattle and hogs. They are to be broken or chopped in pieces and given to the cattle in troughs or thrown upon clean grafs. Several farmers have fattened both hogs and cattle entirely with them. The produce is immense; it is calculated that an acre of ground may produce upwards of twenty tons. The same piece of ground may be used in succession for any number of years.

As the keeping of stock is of great importance there are other crops raised for their food by careful farmers, such as carrots, cabbages, beans, peas, &c. Where the soil is a fine rich deep sand, or light loom, the culture of carrots is very profitable. The culture recommended for them is as follows : In October plough the land twice in the same furrow to the depth of twelve inches ; in about a month after stir it again in the same manner and to the same depth ; in the spring, as soon as the ground is fit for ploughing, manure the ground with rotten farm-yard dung ; then stir the ground as before and harrow it ; then sow the seed, four pounds to an acre, and cover it by another harrowing. Drilling in the seed is recommended for the convenience of hoeing. The carrots, while growing, are to be hoed and kept clear of weeds. An acre will produce from 18 to 25 tons of roots. The roots may be raised with a plough or dug up with prongs. They are used in feeding cows and sheep, fattening beasts and hogs, and in keeping horses. No milk, cream or butter, can be finer than what is got from carrots all through the winter and spring ; no food will carry on a hog quicker or fat him better than raw carrots ; cows and oxen may be fattened on them compleatly ; horses do extremely well on them, and sheep eat them very greedily : all which prove that they are one of the most useful and important crops that can be introduced into field husbandry. The roots should be well dried before they are stored away. Some persons have ploughed their land only six inches deep, giving it three ploughings, two in the fall and one in the spring, and manuring with twelve loads of rotten dung per acre, and found it to yield a very great crop. It should not be forgotten, that this crop is an excellent preparation of the ground for barley and clover. If a farmer could cultivate every

ry year eight or ten acres of carrots, eight or ten acres of potatoes, and four or five acres of pumpkins, he might keep a very large stock, though his farm be small.

Near Norwich, in England, carrots are a common crop : their mode of culture is as follows : In autumn they plough up the stubble designed for carrots, and on that ploughing manure with long yard dung, ten loads to an acre, which they turn in by a trench ploughing with two ploughs, the one following the other in the same furrow. In the spring the seed is harrowed in. The carrots have three hoeings, and the crop is taken up with a three pronged fork as it is wanted. Barley is always sown after them. The profit on this crop is great, as it enables the farmer to keep a large stock, and consequently to provide a larger quantity of dung. But to ascertain with exactness the true value of this crop, it would be well for a farmer to keep an account of the expence, then buy a lot of hogs or oxen, fatten them with the carrots and sell them : This would accurately ascertain the true value of the carrot crop.

In England, where the winters are moderate, some leave the carrots in the ground, and dig them only as they are wanted. But others think it best to dig them as soon as the tops wither. Then dry them well, and pack them close together in some dry place, where they are kept for winter food. But it is always to be observed that the success of a carrot crop depends greatly on the nature of the soil. A light or sandy loam is the best. The roots should stand at about eight inches distant from each other in general. The same piece of ground may be used alternately for potatoes and carrots, if the farmer has not other ground equally suitable ; but if he has, he may follow the carrots or potatoes with barley and clover.

Cabbages

Cabbages is a crop much cultivated in England for the food of cattle. On a light loam, plough the ground well in the fall; as soon as the frost is out of the ground, plough it again in the spring, and a third time about the beginning of April, or latter end of March. On this earth manure with compost; twelve loads to an acre, turn it in, in June. Sow the seed in a garden the middle of April; three quarters of a pound of seed for each acre intended to be planted. Prick out the plants when in two leaves, six inches apart from each other, in beds prepared for the purpose. About the 20th of June transplant them into the field in rows, three feet asunder, and the plants eighteen inches distant. This may be done by the slight mark left by the plough in striking every fourth furrow. If the ground is ploughed by a good ploughman, the rows will be quite straight enough, without the troublesome exactness of a line, which is otherwise necessary on flat land. Some plant in rows, four feet by two, from plant to plant. And it has been observed that the larger the plants are at setting out, so much the better is the crop. The ground must be kept clean by hoeing.

Strong clay land has been found to answer by the following culture. The land was summer-fallowed, or ploughed the year before, and again the spring following. The seed was sown in April, and the plants set on three feet ridges, two feet from each other, the 24th June. They were horse hoed twice with a shim plough, which is so constructed as to cut or shave the surface of the ground without turning a ridge. The rows were twice hand-hoed, and after that furrows were struck with a common plough, earthing up the plants.

Cabbages are found to be excellent for completing the fattening of oxen or weathers which have had the summer's

mer's grafs, and should be applied to that purpose, and consumed in the fall.

The Application of the foregoing Crops in feeding.

Potatoes boiled and mixed with rye or barley meal in the proportion of one or two bushels to twenty, fatten large hogs better than corn alone. In the proportion of one to forty, they fatten porkers, and half fatten-bacon hogs. One third barley meal, and two thirds potatoes boiled, are found to exceed peas or barley alone in fattening hogs; but what is more material, experience has proved, that being boiled and given alone, they will fatten porkers as well as possible. Feeding cows with them has likewise been tried and found to answer well, and the milk and butter have proved exceedingly good. But it is to be observed that it is bad management to give cows in winter a food which will answer for fattening any animal; and therefore the grand object of potatoe culture ought to be the fattening of hogs, for which use experience has proved they will answer in great perfection, and yield a large profit.

I have not heard of any accurate experiments to ascertain the best use that may be made of pumpkins; but as they are a rich solid food, I am inclined to think they may be applied to the purpose of fattening, and may be found nearly equal to carrots.

Carrots are found to be excellent for feeding horses and fattening sheep, cattle and hogs. Boiled and given to hogs, they have been found to be worth four pounds sterling a ton, or 2s. a bushel: given raw, they are estimated to be worth 1s. sterling a bushel, or 40s. a ton, either for feeding horses or fattening hogs, sheep or cattle.

cattle. It has been estimated, and experience hath proved, that ten acres of good carrots will fatten sixty sheep, four large oxen, and winter eight horses : This sufficiently shews the great profit arising from this culture : Nor is this all, the ground is admirably cleaned and prepared for future crops, and the dung arising in the expenditure of the crop is of vast consequence in the improvement of other fields. By actual experiments made, it has been found, that twenty tons fattened four oxen, weighing, on an average, 1330lb. in fourteen weeks, each beast having seven pounds of hay per day ; and less than two hundred weight fattened a pig, bought for the purpose, and which, sold to the butcher, yielded a profit of eight shillings sterling.

The best use of cabbage has been mentioned above. The application of all roots to the food of cattle or hogs is the material object ; because the difference in good husbandry between selling a crop and using it at home is immense. Upon the most moderate computation, one acre of potatoes or carrots, if the cattle are kept well littered, which may easily be done by collecting leaves or stubble, or both, will in the consumption raise dung enough to manure two acres well. The encreasing fertility of a farm, a part of which is so employed, wants no illustration : it is an object alone sufficient to change the face of land.

I shall omit making any observations on the culture of beans, peas, onions, &c. my object being principally the improvement of a farm with the view of raising a fattening stock. Where there are natural meadows, I presume these will not be neglected ; and where there is a command of water, I take it for granted, a careful farmer will not fail to lead it over his sloping grounds, and the sides of hills which he will keep for mowing grounds.

If

If he has boggy lands, he will be careful to drain them, or if that cannot be done, he will try to produce meadow or duck grass, which will grow in very miry places, and form a tolerably firm surface even upon bogs, so that in a few years they may not only be mowed, but will be sufficiently firm to bear horses with carts to carry off the hay.

Where the land is gravelly and unfit for the culture before mentioned, it will be well to try the Sainfoine grass. This is a native of Italy or the hilly country bordering on the Alps: It is now much cultivated in France, and of late years has been introduced into England; and from all accounts, it appears as if it would answer well in this country. It strikes a deep root, grows on poor soils, and yields a large crop. Even when sown on the tops of hills and on stony or gravelly ground, it is said that it will yield, on an average, two tons an acre, and a good fall pasture. It is sown broadcast among oats or other spring grain, in the same way as clover, and will last from fifteen to twenty years. Any soil will do for it if free from springs and stagnant water. When it grows weedy, it is harrowed till the ground has the appearance of a fallow. This destroys the weeds and natural grasses without injuring the sainfoine, and adds to its duration. If half what is said of it be true, it certainly will deserve the attention of our farmers. The seed may be imported from France or England. The usual time of sowing it is in April. The quantity of seed is four bushels to an acre. About ten loads of dung to an acre, laid on in the fall, every four years, and a good harrowing the spring following is all the culture necessary.

There are several other artificial grasses, such as bur-

net, luzerne, &c. which are highly recommended, but I have some doubt, notwithstanding what is said of them, whether, upon a fair experiment, they will be found to excell our blue grafs and white clover or our red clover. Sainfoine, indeed, according to what is said of it, has this in its favour, that it will thrive and yield a good crop even on poor soils, may be sown with grain, and will last for many years. Its culture is cheap and simple, and when it begins to fail it may be soon renewed. But after all, the culture of clover deserves the particular attention of the farmer, and will be found to be one great pillar of good husbandry. The importance of a grafs which is of so hardy a nature as to bear sowing with grain, and is subject to scarcely any failure; which will, the year after it is sown, yield from three to four tons of hay from an acre, and often times more at two mowings; which will last one or perhaps two years longer if it suits the farmer, and which is for wheat a better preparation than the finest fallow, requiring at the same time but one ploughing before the wheat is sowed. All these circumstances unite to render clover an object of high importance and well deserving the attention of a farmer. The advantage will appear still greater when it is considered that the crop may be all, and usually is, consumed by cattle at home. Hence the farmer is enabled to keep great stocks of cattle on soils where he could not otherwise have any, and thereby raise much dung, and keep his land in good heart.

Hitherto I have directed the attention of the farmers almost altogether to the collecting and making manure from his stock. This is the more necessary as other kinds of manure, such as marle, lime, &c. are not always within his reach; but where any of these can be got at

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a reasonable rate, he will be very wrong if he does not avail himself of the advantage.

As the subject of liming land is of importance, I will here insert the observations and practice of a friend of mine in the use of lime for manure, which he was so obliging as to communicate to me as follows :

“ I have in the course of seven years, put on as many thousand bushels of lime in a great variety of modes. With respect to farming for wheat, rye or corn, every one takes his own method. It is impossible to form any general rule to suit all soils. The method must depend on the quality of your land. If the land be much worn out, it will take the less quantity of lime. The soil best adapted for lime is a loamy ground inclining to sand, at least I have found it to answer best, though I have heard of great things being done with lime on clay. Deep ploughing, in the first instance, ought to be practised, but shallow ploughing after the lime is laid on. Lime evaporates, but it has a greater inclination to sink into the earth. Mixing it well by frequent harrowing is absolutely necessary. You may put on a greater quantity if you plough deep ; but do not be in haste for your profit the first year, as the cultivation requires frequent ploughing and tending. Rye will answer the first year, but wheat will come to nothing, as the crops on limed ground are late, and the mildews with us operate most on late crops. I generally begin with forty bushels of unslacked lime per acre, and put on the same quantity every third year. This you may continue to do until you find your land in sufficient heart. I have never exceeded 120 bushels an acre, put on as before described. My land would not average without lime above eight bushels of wheat an acre, and when I had limed it sufficiently

sufficiently, I have had in some instances twenty-five, and on an average twenty bushels per acre. The best time for putting on lime is in the autumn: after ploughing deep, put on your lime, harrow it in and let the ground lie fallow through the winter. There is no advantage in letting your ground lie idle, as the lime wastes as well without as with a crop. If you chuse to turn your ground into grass, the best way I have found is, after taking off three crops of grain, to sow buckwheat with the grass seed after harvest. Let it lie three years in clover, which of itself meliorates the land; you may then plough it and proceed with the usual cultivation for grain, putting on lime as before. I have successfully ploughed in clover when it was in full blossom: This is a great manure, and your crop overpays for the loss of the grass. I have found great benefit by sprinkling about a pint of slacked lime on every hill of Indian corn just after it is planted."

On this I would just observe, that, had my friend attended to the true course of crops, he would have experienced much greater advantage from his lime. The taking three crops of grain, or even two crops, after Indian corn, must foul the land and exhaust it too much.

There is another manure for grass, which has of late been highly extolled, I mean gypse or plaister of Paris, powdered fine and scattered over the ground, about three or four bushels to the acre. The stone used about Philadelphia has been brought from Nova-Scotia or Cape-Breton. I am-told there is a vein of it found in Bucks county, in Pennsylvania, and another vein of it near Patuxent, in Maryland. I wish further experiments to be made with this manure. I have had some made on light gravelly soils and on dry loamy ground, which produced amazing effects.

Having

Having been informed that my friend, whose letter I have quoted above on the subject of lime, had made some experiments with gypse, which had succeeded to the most sanguine expectation, I wrote to him and requested him to communicate to me his experiments, and, at the same time, consulted him about taking one of my farms into my own management: His answer contained the following remarks:

“If you are serious about your farm, set somebody at work directly to clear out your water courses on your meadow; mend your dams, and get somebody to look after them and the water courses this winter (his letter was dated the 8th of November.) One week of winter water is better than a month in summer. Try a few bushels of lime on your meadow. I spread about twenty bushels to the acre last fall, and had good success. I did this because I could get no plaster of Paris that was good. I am a devotee to the gypse upon grass; my experience in this way is of long standing; but as to grain, I never tried it till this year. I put on my Indian corn a small quantity, one large hand full to four hills, and I think it produced a wonderful effect. About four bushels manured nine acres of corn. The whole of my field was limed; but I left some rows without the gypse. And though the corn is all good, there is a very perceptible difference. In the summer the gyped corn was of a deeper green, and now the ears are much the largest. I also put some on a field adjoining, where the land was very poor, and had neither been dunged nor limed. The effect is the same comparatively with the other corn in this field; but none of it nearly equal to that in the limed field. I tried a small quantity on buckwheat, and I think I saw a difference much to the advantage of the gypse in this experiment. As to grass, I am convinced of its effects. I never tried it in vain.

vain. I have put only four bushels to the acre, and that in the spring about the middle of March. It will not do for wet or sour land." It is best to scatter or sow it in calm drizly weather.

The third article in farming is good ploughing and keeping the ground clean ; but on this I have said so much in the article of crops that I shall pass on to the

4th. *The choice and management of Stock.*

A choice of the best breed of horses, cattle, sheep and hogs, which is too little regarded, is of great importance to a farmer, and deserves his closest attention. The expence is as great, nay oftentimes greater, in keeping a creature of a bad breed as of a good, and the value is very different. It appears that the Canada breed of horses would be found excellent for the plough or for draught, and the Esopus breed for the carriage. In the choice of horses, the form should be particularly attended to. The Canada breed comes the nearest to the form of horses in the highest estimation in England for draught, to wit, that of a true round barrel, remarkably short, and lower over the forehead than in any part of the back ; the legs also short. The Esopus breed, of a proper shape and size, are slightly horses for a carriage : they are gentle, tractable and easily broke, and yet have a proper degree of spirit, have a good carriage, are easily kept, and hardy. The Narraganset breed have been accounted excellent for the saddle.

Mr. Bakewell, a farmer in England, has rendered himself famous by his breed of cattle. His principal aim is to gain the beast, whether sheep or cow, which will weigh most in the most valuable joints ; and at the same time, that he gains the shape, which is of the greatest value.

value in the smallest compass; he finds, by experience, that he gains a breed much hardier, and easier fed than any others. In the breed of cattle, his maxim is "the smaller the bones, the truer will be the make of the beast; the quicker it will fatten, and the weight will have a larger proportion of valuable meat." The shape, which should be the criterion of a cow, a bull, or an ox; and also of a sheep, is that of an hoghead or barrel, truly circular, with small and as short legs as possible; upon this plain principle, that the value lies in the barrel, not in the legs. All breeds, the backs of which rise in the least ridge, are bad. By proper management Mr. Bakewell brings up his cattle in amazing gentleness. His bulls stand still in the field to be examined. They are driven from one field to another, or home, by a little switch. He or his men walk by their side and guide them with the stick wherever they please. His cattle are always fat, and this he insists is owing to the excellence of the breed. The small quantity and inferior quality of food, which will keep a beast perfectly well made, in good order, is surprising. Such an animal will grow fat in the same pasture that would starve an ill made great boned one.

He is equally curious in his breed of sheep. The bodies of his rams and ewes are as true barrels as can be seen, round broad backs and the legs not above six inches long. An unusual proof of kindly fattening, is their feeling quite fat within their forelegs, on the ribs, where the common breed never carry any fat. He finds that hardly any land is too bad for a good breed of cattle, and particularly sheep.

With regard to the rot in sheep, Mr. Bakewell thinks it is solely owing to their feeding on lands which have been flooded. Hence it appears that sheep should not

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be suffered to feed on watered meadows. - Water flowing over the land after the beginning of May, is sure to occasion the rot, whatever be the soil.

Mr. Bakewell is remarkably attentive to the point of wintering his cattle. All his horned cattle are tied up in open or other sheds all winter; and fed according to their kind, on straw, turnips, or hay. The lean beasts have straw alone. Young cattle, which require to be kept in a thriving state, and also fattening ones, have turnips; and in the spring, when turnips are gone, hay is wholly their substitute. By these means he is able to keep a large stock. His farm, in all, consists of about 440 acres, 110 acres of which are arable, the rest is grass; and he keeps 60 horses, 400 large sheep, 150 horned beasts of all sorts, yet has generally 15 acres of wheat and 25 acres of spring corn.

He has adopted a new system in the management of his horned cattle. He used to draw with teams of oxen, and found that he must keep double the number worked to have one set coming in to work and another going out. He therefore changed that system, and draws all with cows. They are kept on straw till three years old, then bulled and worked till four years old; by which means he finds a great saving; and that calves bred from cows rising from three to four, far exceed those from cows rising from two to three years. He finds also that the teams of cows are full as handy and draw as well as oxen of the same size.

In working with cows or oxen, I am persuaded, if harness was used instead of yokes, the cattle would draw with much greater power, would move faster, and be more handy and convenient. The harness should be much the same as that for horses, except the collar's opening to be buckled on, and being worn in the contrary

contrary manner to horses, that is, the narrow end of the collar which opens being downwards: and as the chains are fastened to them in the same direction as in horse harness, the cattle draw with them much higher than horses, the line of the chains being above the chest and almost up to their backs. This variation is necessary from the different shapes of horses and oxen.

The suffering the horns of cattle to grow, is oftentimes highly disadvantageous, by the cattle's goring each other; and at the same time it renders them more unruly and untractable. For these reasons a farmer in Pennsylvania has fallen upon a practice to prevent the horns of his cattle from growing. His method is, when a calf is a month old and the horns begin to sprout, he cuts off the knobs with a chisel, and with a sharp gouge pares them clean from the bone; he then sears the wound and fills it with hogs lard. He says he never lost a calf by the operation, and that they did not seem to thrive the less for it; that the loss of their offensive weapon seemed to change the very nature of his cattle in respect to gentleness; and on that account he apprehended his cows gave more milk, and his cattle were easier raised and housed in the winter. For he could drive them young and old into a close yard or stable like a flock of sheep without difficulty or danger.

Fifth. Respecting the Orchard and its Produce.

The care of orchards and the making good cyder, is so very profitable, that it will necessarily draw the attention of a farmer.

Mr. Anderton, a gentleman in England, famed for good cyder, gives the following account of his approved method of making it.

“I should

“ I should first tell you my orchards are on a clay soil, which circumstance I think conduces much to the strength and goodness of the liquor. I will be short in my practical account, making but few observations, and leave the curious to draw speculative reflections from it. I permit my fruit to remain on the trees till a great part of them fall by ripeness; then gently shaking the trees take in the apples in dry weather, laying them in heaps of equal ripeness in a loft over the press. There they remain till they have perspired and that perspiration ceases. As soon as convenient, afterwards, I press out the juice; if it casts a pale colour I permit the pulp after it has passed the mill to remain in vats or other open receptacles for twenty-four hours, which will heighten the colour of the juice. As soon as it is expressed I pour it into vats through a sieve, where it remains about two days and a night according to the nature of the apple and the state of the weather (the longest when a frost) till a thick head or scum rises on it. Then I draw off a little in a glass to see if it is fine; and as soon as I catch it so, I fail not without delay to draw it off into open vats, if I have them, if not, into hogheads. If the juice be put from the press into vessels wider at top than bottom, and I draw it off as soon as fine, I need not take off the head first, as in going downwards, it will not, in that case, break and mix with the body of the liquor. But if my vessel, in which it is, be of another construction, or I have not been attentive to draw it off in the critical hour, I find I do better before I begin to draw, to take off the head with a wooden skimmer and throw it away, and then speedily draw off the cyder. Whenever I find the brown head begins to open in the middle or elsewhere and a whiteness appear at the opening, I'm pretty certain it is high time to be busy in drawing off. But I find from experience
that

that the surest token is to observe its state by what is drawn off in a glass, which is to be done by the help of a peg placed at a proper distance from the bottom of the vat, and this method of observation should be closely attended to ; for I have drawn a glass of cyder out of a vat at eight o'clock, foul, another at ten, fine ; almost candle bright, without any appearance of the head's opening as above observed : at eleven, it was growing cloudy apace, without high winds or any extraordinary event which I could perceive, to occasion it : and I found it absolutely necessary not to lose a moment in drawing it off. If then drawn off into other open vessels, a fresh head may arise in twenty-four hours, or thereabouts, when it may be racked into a close hoghead or other receiver, where it will begin to ferment after a day or two, according to the weather, the nature of the fruit, and other circumstances, I then permit it to ferment four or five days generally, never exceeding a week for the hardest fruit, such as wildings, &c. Then I fumigate a clean sweet hoghead or other close vessel, with a match or two made of coarse cloth, dipped into melted stone-brimstone, and rack the cyder into it as speedily as possible, watching it again in the same manner, till I catch it very fine. When another such racking often turns out the final one. I cover the bung with a tile or piece of thin wood only, during the season of racking. And when I put a bung cork into the hole in the spring, I leave a peg-hole open just by it. The fœces through the whole process are constantly removed. I never seek to raise frequent fermentations, and often compleat the business by two or three rackings ; but have had very good cyder, which has been so prone to ferment, that I have been obliged to stop it by racking it into fumigated vessels ten, and even upwards of a dozen times. Many other, probably much better methods

Methods of stopping the fermentation, and bringing the cyder fine, I have heard of ; but these are what I have in general hitherto used, and have the satisfaction of finding my cyder as good as most I meet with elsewhere. And though I am far from thinking my management unimproveable, I will answer for its turning out well to those, who being unacquainted with a better method, will attend to this."

On a farm managed in the manner above mentioned, where there will necessarily be much food for bees, the care and management of them will naturally attract the attention of an intelligent farmer. The expence and trouble is so trifling, and the profit so great, that he would be inexcusable, if he did not add this to the profit of his farm. Bees will spare a considerable portion of their labours, and may be preserved through the winter ; and as the portion of wax and honey, which they can spare, may easily be taken without injuring them, I trust the barbarous practice will not be followed of destroying whole swarms, in order to enjoy the fruits of their labours. There are several authors who have written on the subject of bees. Wildman and White are the most approved. A careful perusal of them is therefore recommended to all who undertake the management of bees.

